

**Question: -**

In a class of 60 students, 40 opted for NCC, 30 opted for NSS and 20 opted for both NCC and NSS. If one of these students is selected at random, then the probability that the student selected has opted neither for NCC nor for NSS is (2019 Main, 12 Jan II)

- (a)  $\frac{1}{6}$       (b)  $\frac{1}{3}$       (c)  $\frac{2}{3}$       (d)  $\frac{5}{6}$

**Solution: -**

Let  $C$  and  $S$  represent the set of students who opted for NCC and NSS respectively.

Then,  $n(C) = 40$ ,  $n(S) = 30$ ,  $n(C \cap S) = 20$

and  $n(U) = 60$

$$\begin{aligned} \text{Now, } n(\overline{C} \cup \overline{S}) &= n(\overline{C \cap S}) \\ &= n(U) - n(C \cap S) \\ &= 60 - [n(C) + n(S) - n(C \cap S)] \\ &= 60 - [40 + 30 - 20] = 10 \end{aligned}$$

So, required probability =  $\frac{10}{60} = \frac{1}{6}$